Ten age groups are often used for age adjustment of death rates. This provides enough detail to capture differences in the age distributions of the populations that are being compared, but not so many age categories that the data are "spread too thin."

An alternate way to compute the age-adjusted death rate by the direct method is simply to multiply the age-specific death rates by the corresponding proportion of the standard population in that age group and then sum these products across all 10 age groups. This weighted sum is represented by the following formula.

Formula:

$$\text{Directly age-adjusted death rate} = \sum_{i=1}^{10} (w_i p_i)$$

where p_i is the age-specific mortality rate for age group i and w_i (or the weight) is the proportion of the standard population in age group i. (Tip: Move the decimal point of the percentages in column 3 of Table 2 two places to the left to get the proportion.) The crude death rate can also be expressed as a weighted sum of the age-specific death rates and the proportions of the population by age, but in this case the proportions are simply the proportions of the study population (instead of the standard population) in each age group. Try to reproduce the crude and age-adjusted death rates in Tables 1 and 2 using this weighted sum method! Any minor differences are due to rounding.

An age-adjusted death rate is a summary measure that condenses a lot of information into one figure. Where feasible, it is always desirable to inspect the age-specific death rates of the populations being compared. This extra attention to detail often provides further insights into the nature of the mortality differences between the populations.

Table 2. Age Adjustment of the All-Cause Death Rate Using the Direct Method: Hertford County, North Carolina Residents (1991–95 Combined)

Age Group	1 Age-Specific Death Rates per 1,000 Population	2 1980 N.C. Population (Standard)	3 Percentage of Standard Population by Age	4 Expected Deaths in Hertford County
0–4	3.68	404,560	6.9	1,489
5–14	0.12	927,836	15.7	111
15–24	1.45	1,144,204	19.4	1,659
25–34	2.29	968,215	16.4	2,217
35–44	3.64	689,838	11.7	2,511
45–54	6.87	601,866	10.2	4,135
55–64	24.30	552,494	9.4	7,901
65–74	32.55	389,244	6.6	12,670
75–84	72.10	172,408	2.9	12,431
85+	133.41	45,956	0.8	6,131
Total	11.9 (Crude death rate)	5,896,621	100.0	51,255

Age-Adjusted Death Rate = (51,255 ÷ 5,896,621) x 1,000 = 8.7